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An infrared imaging microscope, particularly of the type used to carry out FT-IR measurement, has a detector in the form of a small detector array of individual detector elements. The outputs of the detector elements are fed in parallel to processing means which process the output signals. The use of a small array means that the outputs can be processed without the need for complex multiplexing or perhaps no multiplexing at all thus avoiding the reduction in signal to noise ratio which is associated with large scale multiplexing. The small detector array will generally have between 3 and 100 detector elements. Typically the upper limit will be 64 and a preferred arrangement has 16 detector elements.